Annual Report of Countywide ITS Efforts by Agency

2006 Annual Report of Countywide ITS Efforts by Agency

2006 Annual Report of Miami-Dade Countywide

Intelligent Transportation System (ITS) Efforts By Agency

Table of Contents

GLOSSARY OF TERMS and ACRONYMS

The world of Intelligent Transportation Systems (ITS) is filled with acronyms and technical terms. Listed below are a few definitions to help expand your ITS vocabulary:

ATIS – Advanced Traveler Information System – A high-tech system that delivers real-time traffic information to motorists and other travelers. Input can be collected by pavement sensors and cameras. Other input can be gathered from verbal reports by drivers and observers and AVL tracking. ATIS will provide information to inform travelers via dynamic message boards, on-board computers, pagers, Internet web-sites, traffic kiosks, and news media outlets such as highway advisory radio.

ETC - Electronic Toll Collection - This term refers to a variety of methods used to collect tolls via car-mounted transponders that communicate with tollbooths, deducting tolls from established accounts. Eliminates stopping at tollbooths and digging for coins.

Fiber Optics - Fiber-optic lines are strands of thin, optically pure glass that transmit digital input signals (i.e. voice, data, and video information) over modulated light beams that pass through the fibers. Basic fiber optic systems consist of 1. a transmitting device, which generates the light signal 2. the optical fiber cable, which carries the light and 3. a receiver, which accepts the light signal transmitted. The fibers' high bandwidth and long-distance capabilities allow hub electronics to be centrally located.

GPS – Global Positioning System. GPS are used to track the location of GPS receivers (often installed in moving vehicles). A GPS uses 24 earth-orbiting satellites, guaranteeing that at least four of them are above the Earth's horizon at any given moment. These GPS satellites send out radio signals to GPS receivers, which in turn measure the amount of time it takes for the signal to travel from the satellite to the receiver; the receiver can then calculate its longitudinal and latitudinal coordinates.

ITS – Intelligent Transportation Systems. This term covers transportation improvements that ordinarily use technology in order to make the existing transportation system work better.

Incident – Any unforeseen event that restricts traffic.

Microwave Signals – Microwaves are electromagnetic waves that have a wavelength from 10mm to 300mm (1 GHz to 30GHz). Microwave detectors fall in two categories: Doppler or radar devices.

Radio signals – A radio wave is an electromagnetic wave propagated by an antenna. Radio waves have different frequencies, and different signals can be received by tuning a radio receiver to a specific frequency. A radio system requires a transmitter and a receiver.

Real-time – Current, up to the minute. This term refers to very current information.

SunGuide – A program in Miami-Dade, Broward, and Palm Beach Counties that links ITS projects in South Florida and encourages their growth.

SunPass – is the Florida Department of Transportation's Prepaid Toll Program.

Transponder – Electronic devices that store information. Other devices can *read* this information. When placed in cars, transponders can be used for automated toll collection like SunPass.

Variable or Dynamic Message Boards – Electronic signs along the highway that can change the message they display. These help drivers learn about upcoming traffic delays and alternate routes.

INTRODUCTION

What is an Intelligent Transportation System (ITS)?

An Intelligent Transportation System (ITS) applies advanced technology alternatives to transportation problem-solving, allowing for enhanced mobility along existing or newly constructed transportation facilities. It offers the precision of real-time information for more efficient and safe trip making. Each ITS element, as part of the Transportation Plan of Miami-Dade County, offers a much needed complement to existing/planned transportation capacity and safety improvement projects.

- **Background:** The initial ITS Plan for Miami-Dade County was approved by the Miami-Dade MPO Governing Board in February 1997. That plan primarily served pital needs, a variety of short-term strategies are identified to deal with urban travel congestion. These range from highway traffic design solutions to employer-based measures to promote use of carpooling and public transportation.

- Implementing the projects listed in the Plan will alleviate the increasing levels of traffic congestion expected in the future and will effectively help to maintain the best possible standard of mobility in Miami-Dade County and the Southeast Florida region.

- **About this annual report**: Since 1997, ITS stakeholders have been working to deploy different ITS projects which must be integrated into a single transportation system, or architecture. Currently a single, ITS architecture for the tri-county area has been defined. This report depicts stakeholders current and future ITS efforts and investments.

FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) DISTRICT 6

Travelers in the tri-county area of Miami-Dade, Broward, and Palm Beach counties in South Florida experience some of the highest levels of congestion in the country. District Six of the Florida Department of Transportation (FDOT) in Miami took a decisive step forward in the long-range program to implement the recommendations of the Southeast Florida Intelligent Corridor System study. Since the completion of this study by Federal Highway Administration and FDOT in 1995, the Department embarked on a broad range of initiatives towards developing a regional and multimodal intelligent transportation network.

Completed FDOT District 6 FY 05/06 ITS Projects

SR 826 (Palmetto Expressway) East/West ITS Deployment: The project consisted of the installation of four Dynamic Message Signs (DMS), nine Closed Circuit Television (CCTV) cameras, and 50 detector stations. Project limits are from NW 122nd Street to Golden Glades Interchange. The project was completed in September 2005.

SR 5 (US 1 Monroe County) ITS Deployment in the Upper Florida Keys : The project consisted of the installation of four DMS, eight CCTV cameras, and two detector stations. Project limits are from Key Largo to Florida City. The project was completed in September 2005.

SR 826 (Palmetto Expressway) ITS Deployment from SR 5/US 1 to NW 122nd Street: The project consisted of the installation of 11 CCTV cameras. The project was completed in September 2005.

Current FDOT District 6 ITS Projects

SR 9A (I-95) Package B: Installation of 15 DMS, 54 detector stations, 27 route diverters, 14 emergency stopping sites, and 22 ramp signaling sites. Project limits are from SR 5 (US 1) to Miami-Dade/Broward County Line. Package B approximate completion is Fall 2006.

SR 5 (US 1 Monroe County ITS Deployment from Key West to Key Largo: This is a design/build project that is installing seven DMS and 41 CCTV cameras. Estimated completion date is November 2006.

SR 112 (I-195/Julia Tuttle Causeway) ITS Deployment from I-95 to Alton Road: This is a design/build project that is installing four DMS, six CCTV cameras, and 22 detector stations. Project limits are from NW 11th Avenue to Alton Road. Estimated completion date is November 2006.

SR 93 (I-75) ITS Deployment from SR 826/Palmetto Expressway to Miami-Dade/Broward County Line: This is a design/build project that is installing 30 detector stations, four DMS, seven CCTV cameras. Estimated completion date is November 2006.

SR 5 (US 1) Corridor: Implementation of four Arterial DMS, 17 CCTV cameras, six detector stations and fiber optics between SW 112th Avenue and SW 17th Avenue in Miami-Dade County (a distance of 16 miles). Estimated completion date is November 2007.

Signal System Upgrade: Fund the upgrade of the Traffic Control System to an Advanced Traffic Management System. Project limits are throughout Miami-Dade County.

Traveler Information in the counties of Miami-Dade, Broward, and Palm Beach: Provides uniform, multi-modal, real-time traveler and traffic information in the tri-county region under the SunGuide program. Initiatives started under this project include deployment of an Interactive Voice Response telephone system, website (www.511southflorida.com), 511 Service, and the Consumer Information Network (CIN). The 511 voice recognition system has been operating since January 2006. The voice recognition system and Website are both in English and Spanish.

Service Patrols: The Road Ranger service patrol is a free service of the FDOT. Road Rangers in FDOT District 6 currently patrol I-95, I-395, I-75, I-195, SR 826 and Miami-Dade Expressway Authority (MDX) roads (SR 836, SR 874, SR 924, SR 878 and SR 112). In September 2005, FDOT District 6 expanded Road Ranger coverage to the arterials (SR 5/US 1 from SW 112th Street to SW 17th Avenue) as part of a two year pilot project.

Future FDOT District 6 ITS Projects

I-395 ITS Deployment from NW 7 Avenue East to Alton Road:
This is a design-build project. One DMS, Nine CCTV cameras, and ten detector stations units will be installed. Fiber optic cable will be installed along Port Boulevard. Letting of this project will be February 2007.
Scheduled completion date is August 2008.

MIAMI-DADE TRANSIT AGENCY (MDT)

COMPLETED IT PROJECTS

Uninterrupted Power Supply (UPS) Replacement (through out Transit): UPS are components used in network closets to provide clean power to network equipment. Due to the lightning in Florida, these devices are damaged frequently. This project is a yearly replacement plan.

Internet Back Up Solution Project: Project will develop a redundant link to the Internet. The goal is to prevent interruption of services for STS providers and CIS accessibility to trip planning.

Access Control System (Cyber Lock/AMAG) Project for Rail & Mover Stations: Planning and coordination of a proxy card type system implementation for electrical and train control rooms located at Metro Rail and Metro Mover stations.

CURRENT IT PROJECTS AND MAJOR SYSTEM MODIFICATION/EHANCEMENTS

Consumer Information Network (CIN) – Real Time: Regional Trip Planning project will provide a new software system for the Miami Dade, Broward, RTA Tri Rail, Palm Beach, and South Florida Commuter Services region. Integrate Consumer Information Network with 511 telephone information system. This system will replace the existing Customer Information Services Trip Planning application and Complaints module currently in use.

Enterprise Asset Management System (EAMS) – Phase 1: This project will implement and integrate Miami-Dade Transit's Material's Management, Maintenance, and Inventory into a re-engineered, manageable, and fiscally responsible system.

Computer Aided Dispatch Automatic Vehicle Locator CAD/AVL System Modifications and Enhancements (Software – Increase Fleet): Modifications and enhancements to improve the current business operation that will include: Automatic Schedule Download, Time Point Entry & Exit, Next Time Point Search, expansion of radio infrastructure to accommodate the increased fleet size, and Importing of standard countywide GIS files.

Where's the Train: Rail vehicle location data will provide the ability to display "next train" information on the rail platform.

- **Web** – Project entails developing a program to capture the train location data from the rail relays and the development of a web site displaying the train location.

- **Radiant** – Write program to collect train location data from track relays.

- **Interface with Electronic Signage** – (Dependent on RFP 351) – Write program to interface the rail data to the electronic signage.

Bus Stop Maintenance Application: The application will provide the users with the ability to view and update bus stop related information using mobile devices integrated with a mapping component and global positioning system (GPS).

Visitor Badge: Evaluating Scope of Work and preparing cost estimate to implement the CISCO Fast Pass at the Transit facilities.

Positive Attendance Control Evaluation (PACE) Re-write: Analyze and develop a new Positive Attendance Control Evaluation system.

Trapeze FX 461 Upgrade

PASS Sales on the Web - Phase 2 Subscription – Phase 2 will include a subscription services function that will allow riders to set up recurring automatic payments for their MetroPass.

Fare Collection System / Automatic Passenger Counters / Mobile Data Terminals: Regional Automated Fare Collection System/Transit Employee ID/SMART CARD System: This project entails the implementation of a regional fare collection system onboard the bus fleet and new fare gates. The project will also include the deployment of Smart Cards to be used for fare payment and an employee ID that will integrate Bus Operation procedures, Fare Collection and the CAD/AVL system in one single login.

Planning Software: The Service Mobility and Planning section needs a more efficient and effective route planning system to improve their business process. Currently, the data collection and analysis for both FTA reporting and rider-ship information is performed manually. The current planning analysis process does not incorporate census, schedule adherence, GIS, traffic information and other information. Utilizing planning software with an integrated Geographic Information System (GIS) to perform complex spatial and statistical analysis will assist Miami Dade Transit to synthesize all the different types of information available for analysis and produce automated reporting. Planning systems also include the capability to capture the ride check information on a hand held device with an automated process to upload the data or to integrate with Automatic Passenger Counter (APC) data if available.

Scheduling Software Interface Module (Blockbuster): Blockbuster is an advanced fixed-route scheduling/run cutting software that will cut hundreds of runs to generate quick scenarios, work with selected scenarios for final duty schedules and create quick and automatic generations of optimized duty schedules. This advanced scheduling software will allow changes in work and pay rules to be performed easily. Also, during union ongoing negotiations, the result of changes in wage or work time can be viewed quickly by creation of scenarios. The users will be able to use graphs to show efficiency in the results.

E J Ward Fueling System – Lehman: Install the EJ Ward system at the Lehman Center fuel island. Project includes installing network communications to the fuel island. Benefit will be the ability to track fuel dispensed for the Wayside equipment and all other vehicles at that site.

Automated Route Guides:

KIOSKS (Phase 3): This project entails the installation of transit information kiosks at all Rail station entrances. The additional kiosks will have limited access to the internet extending access to the 511 Traffic and Transit Web site, including the Regional Trip Planning, and Miami Dade County and MDT web sites. Where appropriate, site specific information may be added to the kiosk. Customer Information Phones will be located next to the kiosk and will provide access to a live agent to fulfill ADA requirements. By providing the ability for transit riders to view Trip Planning information, traffic information, service disruptions, and route maps and schedule information as needed, MDT will be able to extend county services to the public 24 hours per day, 7 days per week.

Enterprise Data Modeling, Data Warehouse & Reporting System: This project is to create an integrated enterprise data base that is the central repository for all reporting.

- Section 15 Database Replacement (NTD)

Electronic Passenger Information System (Rail & Bus): Install electronic signage on the rail and bus systems. Provide customers with audio/visual emergency information, news & entertainment as well as electronic Transit Passenger information at Rail Stations, inside Buses, Rail Cars, and Mover Cars.
Real Time Data Interface with Electronic Signage - Dependent upon RFP.

Special Transportation System Software Upgrade & Maintenance (STS/Paratransit): Project to Replace upgrade and centralize the Special Transportation System Computer Software System and Processes. This project also includes:

- Voice Response Unit: Will allow riders to confirm and cancel trips using the telephone.
- Mobile Data Terminals (Dependent upon Fare Collection RFP): Project to install Mobile Data Terminals (MDT) in the Special Transportation Services vehicles. Terminals will interface with the STS software to keep track of vehicle location, schedule adherence, driver manifest, and communication to the dispatch facility. MDTs will also interface with the Transit Smartcard fare collection system. Benefits include real time trip cancellations and additions, reduced radio communications, and real time vehicle location information. This project will provide the location of the vehicle in order to provide "where's my ride" information to the rider.

TransitNet Enhancements – Est. 2005 – Complete an assessment of the current Transit Intranet and make necessary updates and redesign the sites where necessary.

Wireless Solution: This project will eventually create a wireless infrastructure for Miami Dade Transit. A wireless infrastructure will allow the use of wireless devices throughout all MDT sites. The project will have several phases beginning with a wireless solution at MDT garages to: manage fleets and operators more efficiently, mobility for supervisors to improve incidents tracking, mobile access to the Transit Operational System and Computer Aided Management System which will allow inventory control and bar coding capabilities via handheld devices. The following are anticipated completion dates for Phase 1 wireless capabilities at Transit Garages:

Allied Switch Deployment/Mini Hub Replacement: Identification and removal of all Mini-hubs throughout the agency. Mini-hubs are devices used as a temporary fix the need to augment cabling in a specific area. Devices are used as a short term solution.

Metrorail LAN to Enterprise: Project will convert use of the network by re-assigning the network addressing scheme and configurations of MDT IT equipment to comply with the County's MetroNet standards.

Rewire of Main Computer Room: This project will clean up and bring up to code the Network Cabling on the 5th Floor Computer Room, while at the same time making it ready for Gig over copper technology which lays the foundation to move from 100MB/s to 1000MB/s.

Migrate Exchange / Active Directory (ETSD): Migrate all email accounts from Exchange 5.5 to Exchange 2003 and the Active Directory.

EAS Software Integration w/Exchange (ETSD): Implement archiving software for Exchange. This will allow us to create our own retention rules separate from the County, while minimizing storage space.

Disaster Recovery Phase 2 – Analysis of current and future disaster recovery needs. Reviewing and creating procedures and reviewing possibilities of additional DR site locations.

Call Center Phone Management System & Recorder: Installation of a robust call and voice-processing platform capable of utilizing the latest phone technology for call center systems.

Track It Upgrade: Upgrade current version of the internal IT system (Track It) to new release.

FUTURE PROJECTS

- Random Selection of Applicants (on-hold Cathy Lewis)
- Incident Management
- AutoCAD Upgrade
- Trip Planning Data Integration to CAD/AVL
- Capital Plan Project Application
- Metro Mover Software Upgrade
- Transit Operations Systems (TOS) Upgrade & Replacement
- Real Time Vehicle Maintenance Monitoring Bus Diagnostics & New Development
- Trapeze FX Bus Bench / Stops EAMS Interface
- CAD/AVL System Replacement
- Transit Safety Business Analysis & Application Upgrade (Analyze computerized off the shelf)
- Electronic Document Management System (EDMS) Phase 2
- Transit Information on Handhelds
- Human Resources Business Analysis & Application Upgrade
- Enterprise Resource Planning Analysis & Application Upgrade (ERP)
- Disaster Recovery Phase 3

DANTE B. FASCELL

PORT OF MIAMI_DADE

I T S PROJECTS

Fiber Optic Loop – This project will greatly expand the communications infrastructure throughout the northeastern portion of the island via the creation of a redundant fiber optic Ethernet network.

(Expected Completion Date: August 2006)

Credentialing Badge Prepayment & Verification – This project will allow the prepayment of Company ID Badges via the development of a fully automated Cashier System that will meet the needs of the Seaport's Id Badge Section. The system will allow for future cashiering functions and cash collection functions provide the groundwork for interfacing with other Port-Wide Systems.

(Expected Completion Date: October 2006)

Web Infrastructure & Development Tools – This project entails the acquisition of the necessary hardware and architecture for developing Web based applications. The acquisition of development tools and training of staff will be ongoing to provide for future development.

(Completed: _December 2005)

Operating System and Database Management System Upgrades – Upgrade and expand system software to enable the use of leading edge technology which is only supported on current releases of system software.

(Completed: September 2005)

Parking System – This project provides several multi-level parking garages with an integrated post-payment cruise customer parking system, which includes credit card processing facilities. The system also integrates data from the Port Permit

System and the Identification Badge (ID) System to provide access to parking facilities for authorized users.

(Expected Completion Date: November 2006)

Cargo Gate Control Systems – The improvement of the current system to allow for the rapid processing of vehicles through the Cargo Security Gates. Improvements will provide automated screening at unmanned gates, using Optical Character Recognition software and technology only pedestal which will be manage at a remote command center. (Expected Completion Date: September 2006)

Waterside Alarm and Surveillance System – This project will allow the definition of protected areas which will be monitored by intelligent video and thus send an alarm to the Seaport Command Center whenever the protected area is compromised. This system will also integrate Sonar and Radar to provide for a complete waterside surveillance system. (Expected Completion Date: _January 2007)

Provide Network Communications for new Cruise Terminals D & E – Provide pathway and install telecommunications equipment to allow the future installation of Security Systems in the new Cruise Terminals
(Expected Completion Date: September 2006)

MIAMI-DADE PUBLIC WORKS DEPARTMENT

CURRENT and FUTURE Miami-Dade Public Works ITS Projects

Traffic Control System (TCS): The Traffic Control System is the oldest and most successful ITS system in Miami-Dade County. Over 2000 of Miami-Dade's 2650 traffic signals are online. Traffic signal operations are monitored in real time enabling malfunctions to be dispatched to appropriate field technicians immediately. Various operational modes and timing patterns are changed throughout the day to best serve changing vehicular and pedestrian traffic volumes and to maximize the safety and flow of traffic on Miami-Dade's arterial network. The TCS has been serving the citizens of Miami-Dade County for thirty (30) years and has served as a model for similar systems that have been built in cities all over the world.

Advanced Traffic Management System (ATMS): In July 2005, Miami-Dade County let a contract to design and install an Advanced Traffic Management System (ATMS) to replace the aging TCS. The ATMS was deployed in a 17-intersection Alpha Test in late 2005. During the next few years, the system will take over traffic signal monitoring and control responsibilities of the 2000 signals on the TCS. It will also enable the remainder of MDC's 2650 signalizations to be brought online, as well as all new signals during the next several decades. The ATMS will take advantage of the latest traffic signal monitor and control technologies available, including remote video surveillance, to enable Public Works staff to further increase the safety and capacity of the existing roadway network and reduce side street delays on many approaches to major intersections. The ATMS will interface with other ITS systems at MDT, MDX, and FDOT to increase services to the public such as providing preferential treatment for busses that are behind schedule and accommodating traffic when it is detoured from an expressway due to an incident.

Emergency Vehicle Preemption System (EVPS): The Miami-Dade Public Works Department currently operates an emergency vehicle preemption system which enables vehicles traveling from fire stations in the Cities of Miami and Miami Beach to locations of emergency incidents along over 100 pre-defined routes to obtain green displays at traffic signals, thereby reducing their emergency response times. The system has been in operation since 1986 and is used about thirty times per day. Major upgrades to increase the

efficiency of the system and make it more automated, decrease the detrimental aspects of the system on non-emergency traffic, and expand it throughout the County, are scheduled for approximately 2007 as part of the ATMS project described above.

Reversible Lane Control System for Dolphin Statium: The Miami-Dade Public Works Department currently operates a Reversible Lane Control System (RLCS) on NW 199 St. between 2 & 27 Avenues to increase the flow of peak-direction traffic into Dolphin Stadium before major events and out of the stadium after such events. The RLCS has been serving the public since 1987. Major upgrades to replace aging, failure-prone hardware and increase the efficiency of how the system handles left turn movements are scheduled for early 2007 as part of the ATMS project described above.

Reversible Lane Control System for Commuters: Miami-Dade Public Works is studying NW 7th Avenue and other corridors for the possible implementation of one or more RLCS systems that would be activated every weekday to increase the number of lanes available to move traffic into downtown Miami in the AM peak and out of downtown Miami in the PM peak.

Toll Collection System: Miami-Dade County Public Works operates a toll card system on the Rickenbacker and Venetian Causeways. The system enables drivers who have procured a pre-paid transponder to pass through the toll booths without having to stop.

LED Traffic Signal Heads: Miami-Dade Public Works is preparing to to let an LED Traffic Signal Head Conversion Project. The actual project is projected to begin in late 2006 and be completed in late 2007. The effort is estimated to cost $8 million and will tentatively be funded by future savings in that it will reduce annual traffic signal power bills by $2.5 million. It will also reduce the frequency of burned-out traffic signal bulbs being encountered by MD drivers and enable transportation funds that currently go to the power companies to be diverted to other transportation projects which are of benefit to the public.

Wireless Communications System: In conjunction with the ETSD Department, the Public Works Department is developing a countywide communication system expected to be mostly wireless, but with a fiber-optic backbone. It will be initially used for the Advanced Traffic Management System (ATMS) and will enable real-time monitor and control of the traffic signaling equipment throughout the County. A four-intersection Alpha Test is scheduled

to come online in mid 2006 as part of the ATMS project described above. Its use will be expanded to include other applications in support of many of the County's departments and services such as: video surveillance, video detection at the intersections to support improved traffic flow, Broadband Public Safety (high speed data and video), Wireless Automatic Vehicle Location (AVL), Call Boxes for emergency services, etc. A major advantage of the system will be to enable the PWD to cancel its expensive telephone lines leased from the local telephone company to support the communication of the traffic controllers. As other County communications are transferred to the new system, additional savings will be attained.

Red Light Running Detection Camera Systems: Miami-Dade Public Works is working with the County Attorney's Office to study the feasibility of using video detection systems to identify vehicles whose drivers run red traffic signal displays.

Bus Rapid Transit Traffic Signal Priority System (BRT/TSP):
Public Works Department is working closely with the MPO and Miami-Dade Transit to design and implement a BRT Traffic Signal System. Key feature of the system is that traffic signals will be adjusted by the Advanced Traffic Management System (ATMS in real time to improve the flow of the busses. Initial deployment is scheduled for Kendall Drive (in 2007) with follow-up implementation planned for Flagler Street and Biscayne Boulevard. Features of the proposed system will include developing a concept of operations document, vendor review and presentation, bench test of selected system components, and a field alpha test for selected system components in the deployment of a Bus Rapid Transit and Transit Signal Priority System (BRT/TSP) in Miami-Dade County. The Concept of System Operation and Communications Plan will define the overall BRT/TSP system architecture and requirements for the deployment of a TSP system. A review of selected, up to 4, U.S. transit agencies, including those utilizing transit signal priority system options that are compatible to the existing/future infrastructure in Miami-Dade County, will be conducted to assess their system elements and requirements. A bench test and field alpha test will be performed to demonstrate that the vehicle location system and communications system can successfully operate as a complete and integrated system. This effort will wrap up with the completion of a formal procurement document which shall identify vehicle-based components, landside components, communications elements and needed devices located at the control center.
Completion of this task is scheduled for Spring 2007.

MIAMI-DADE EXPRESSWAY AUTHORITY (MDX)

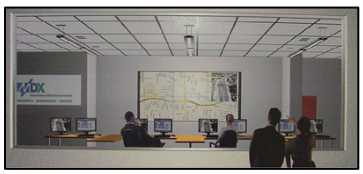
Current MDX ITS Projects

SR 836 Communications & Incident Management/Surveillance (Project # 10002)

This is a Design-build project consisting of design, construction, and installation of communication infrastructure along SR 836 from the Florida's Turnpike Homestead Extension (HEFT) to FDOT's I-95. As part of a Federal (FHWA) earmark appropriated to MDX, in partnership with FDOT, MDX is deploying a series of Intelligent Transportation Systems (ITS) components that will integrate the FDOT SunGuide Transportation Management Center (SGTMC) with the MDX Transportation Management Center (TMC) for the management and operation of the SR 836 Advanced Traffic Management System (ATMS). The ATMS components, which include incident management, network surveillance, and information dissemination, will be integrated with the existing SunGuide software such that they will become a seamless extension to the SunGuide surveillance system. This project will also provide the FDOT SGTMC a direct fiber optic connection to the MDX TMC for information sharing and emergency operational control of MDX's ATMS. This project is currently under construction and the estimated completion date is September 2006.

MDX Transportation Management Center (TMC) (Project # 10006)

The MDX Transportation Management Center (TMC) is to be housed in the MDX Headquarters Facility. The TMC will be MDX's central operations center for collection and dissemination of information regarding freeway management, incident management, electronic toll collection, regional traveler information (via 511), and emergency services management. MDX, as a partner of the State and in an effort to standardize TMCs across the State of Florida, will be implementing the Statewide Transportation Management Center Software Library System (SunGuide), which will be used to operate the ATMS of MDX's entire roadway system. The estimated completion date for the project is July 2007 2005.



SR 112 ITS Freeway Management a.k.a SR 112 Communications & Incident Management/Surveillance (Project # 10007)

This is a Design-build project proposing design, construction, and installation of communication infrastructure and ITS devices along SR 112 from the Miami International Airport (MIA) to FDOT's I-95. As part of a Federal (FHWA) earmark appropriated to MDX, in partnership with FDOT, MDX is deploying a series of Intelligent Transportation Systems (ITS) components that will integrate the FDOT SunGuide Transportation Management Center (SGTMC) with the MDX Transportation Management Center (TMC) for the management and operation of the MDX Advanced Traffic Management System (ATMS). This project proposes integration of the MDX system with FDOT's I-95 fiber optic system for utilization in sending video and traffic device data back to the MDX Transportation Management Center. The estimated project completion date is July 2008.

SR 874 ITS Freeway Management a.k.a SR 874 Incident Management/Surveillance (Project # 10008)

This is a Design-build project proposing design, construction, and installation of wireless Closed-Circuit Television (CCTV) cameras along SR 874 from the Florida's Turnpike Homestead Extension (HEFT) to FDOT's SR 826 (Palmetto Expressway). As part of a Federal (FHWA) earmark appropriated to MDX, in partnership with FDOT, MDX is deploying a series of Intelligent Transportation Systems (ITS) components that will integrate the FDOT SunGuide Transportation Management Center (SGTMC) with the MDX Transportation Management Center (TMC) for the management and operation of the MDX Advanced Traffic Management System (ATMS). This project proposes integration of the MDX system with the Turnpike Enterprise's fiber optic system for utilization in sending video data back to the MDX Transportation Management Center. The estimated project completion date is July 2008.

SR 924 ITS Freeway Management a.k.a SR 924 Communications & Incident Management/Surveillance (Project # 10009)

This is a Design-build project proposing design, construction, and installation of communication infrastructure and ITS devices along SR 924 from FDOT's SR 826 (Palmetto Expressway) to NW 27th Avenue. As part of a Federal (FHWA) earmark appropriated to MDX, in partnership with FDOT, MDX is deploying a series of Intelligent Transportation Systems (ITS) components that will integrate the FDOT SunGuguide Transportation Management Center (TMC) for the management and operation of the MDX Advanced Traffic Management System (ATMS). This project proposes integration of the MDX system with FDOT's planned SR 826, I-75, and I-95 fiber optic systems for utilization in sending video and traffic device data back to the MDX Transportation Management Center. The estimated project completion date is July 2008.

SR 878 Communications & Incident Management/Surveillance (Project # ITS-010)

This is a Design-build project proposing design, construction, and installation of communication infrastructure and ITS devices along SR 878 from MDX's SR 874 to U.S. 1. This project proposes integration of the MDX system with the Miami-Dade County fiber optic system along U.S. 1 for utilization in sending video and traffic device data back to the MDX Transportation Management Center.
The estimated project completion date is July 2008.

MIAMI-DADE AVIATION DEPARTMENT (MDAD)

Information Systems and Telecommunications Division (ISD)

AIRPORT STRATEGIC PROJECTS

MDAD Information Systems/Telecommunications is entering the 21st century with the most comprehensive set of challenges in its history. MDAD is in the midst of a 5.3 billion dollar Capital Improvement Program (CIP). While many of the projects in this program are characterized by brick and mortar, a large family of IT specialty systems are required to support and operate these new facilities. The impact of September 11th has and will add to the complexity of security initiatives underway and more are expected to come as the nation's airport security systems are shaped by new national policy. We are also faced with the requirement to replace several "legacy" systems that have outlived their operational life and no longer support the continued expanding needs of the department. These needs for new systems and processes are in addition to the normal day-to-day operational needs of supporting our user community. This includes 1,200 PC workstations, a new airport wide data network and traditional "back office" applications. Following are some of the projects, which are either currently underway or are being considered. No attempt is made here to prioritize or indicate the magnitude of effort of these initiatives.

Airport ITS Applications

Capital Improvement Program (CIP)

AOIS: Airport Operations Information System – This project will establish a centralized information repository for flight operations and other related operations data. One application of this system is the replacement of the fixed airline signs behind the check-in counters by flat screen monitors making possible the dynamic allocation of counters and gates.

VIDS Displays: Visual Information Display Systems – These are a new family of systems using the latest technology, which display operations information to the public, airline operators and related support agencies. Most commonly known is the Flight Information Display System (FIDS), which displays flight information throughout the terminal to the public.

CUTE: Common Use Terminal Equipment – This project will deploy airport owned equipment for use by air carriers in the operation of ticket counters and gates. It provides the ability for shared use facilities and equipment.

Paging/PA – This project will provide the capability for a new paging and public address system, including emergency enunciation, for the terminal.

Visual Paging – Project addresses ADA requirements for providing information to those who are impaired.

Wireless Infrastructure – Create a secure wireless network (Voice and Data) for both MDAD and Public use. MIA Hotel completed as part of Phase 1 of the wireless deployment.

FLORIDA TURNPIKE ENTERPRISE

On-Going Turnpike ITS Projects

Traffic Management Centers (190717-1-52-03/04/05/08)
The Pompano and Turkey Lake Traffic Management Center (TMC) facilities are staffed 24-hours a day, 7-days a week. Incident management is accomplished utilizing 27 closed-circuit televisions (CCTVs), 9 highway advisory radios (HARs) and 24 dynamic message signs (DMSs) along the Turnpike's mainline. Florida's Turnpike Enterprise has recently assumed ownership and operations of two DMSs on the Beachline Expressway (Toll 528). TMC Team Members work closely with FHP Troop K and other agencies to detect, verify, and mitigate incidents. Advanced traveler information system (ATIS) Team Leaders at each facility work in close coordination with Turnpike Road Rangers by dispatching them on the Mainline, HEFT, Sawgrass Expressway (Toll 869), and Veterans Expressway (Toll 589) through a 450 MHz radio system, an automatic vehicle locator (AVL) system and Nextel radio communications. The TMC's Traffic Operations Incident Coordinator works closely with Roadway Maintenance and Construction. The Florida's Turnpike Enterprise is also part of the Florida Statewide/Central Florida 511 service and the South Florida SunGuide^{SM} 511 ATIS partnership in Miami-Dade, Broward, Palm Beach, Monroe, Martin, St. Lucie, and Indian River Counties.

The TMC, in its role as 24-hour communications center for the Turnpike, performs essential duties to support the Florida's Turnpike Enterprise Rapid Incident Scene Clearance (RISC) program. The TMC is the official timekeeper of RISC milestones and as the hub of traffic/incident management communications. The RISC program is an innovative program that assists the Florida's Turnpike Enterprise to achieve the Open Roads Policy goals by significantly reducing the time it takes to clear major incidents through providing an incentive for the use of specialized vehicle recovery equipment and procedures. Selected recovery contractors are assigned specific sections of the Turnpike and are required to respond to and open the travel lanes within a pre-determined period, making the contractor eligible for an incentive bonus. If travel lanes are not cleared within a period of three hours from notice-to-proceed, the contractor will be assessed liquidated damages. The TMC's role in administering the program is in conjunction with the TMC being FHP's primary contact for Emergency Roadway Maintenance response.
Approx. Completion: Operations Ongoing

Contact: John Easterling (954) 975-4855 ext. 1292 or Mike Washburn (407) 532-3999 ext. 3312

SunNav[SM] Software Development and Integration (190766-1-32)

SunNav[SM] Release 2.0 development began October 2004. Subset releases began installation in March 2005. SunNav[SM] Release 2.0 began the migration from window GUIs to incorporate a XMS/Web page client interface, maintaining many of the same features as the previous GUI. SunNav[SM] Release 2.0 will begin to expand functionality and completely replace SunNav[SM] Release 1.2, which was completed in November 2004, and added a NTCIP driver for DMSs and some additional diagnostic utilities for the DMSs to the features that existed in Release 1.1. Additional feature sets include enhancements for DMS, CCTV, GIS Map integration, incident management, incident response plans and reporting. Road Rangers dispatch management has already been delivered with a sub release of 2.0. Additional functions of 2.0 recently delivered include multiple simultaneous TMC control and management within the Turnpike to create load balancing for performance and also protect from single TMC system failures. SunNav[SM] Release 2.0 also includes center-to-center control utilizing SunGuide protocols for sharing information with other District TMCs. SunNav[SM] Release 2.D is currently being developed to support SunNav[SM] Release 2.0 and will provide for incident detection using non-intrusive roadway devices capable of monitoring speed, volume, and occupancy.

Approx. Completion: SunNav[SM] Release 2.0 – Substantial delivery January 2006; SunNav[SM] Release 2.D - April 2006

Contact: John Easterling (954) 975-4855 ext. 1292 or Ranzy Whiticker (407) 532-3999 ext. 3485

Automated Vehicle Location (AVL) System

The existing Turnpike Road Rangers' AVL system is integrated with both TMC facilities. The current AVL system provides the Turnpike TMC with Road Rangers location information enabling more efficient response to incidents on the Turnpike by dispatching the closest available mobile asset(s). The AVL system also provides the TMC with accurate vehicle speed of Turnpike monitored vehicles to help determine traffic flow. The AVL system collects vital information and delivers this information to the TMC in "real time." AVL has been installed and implemented at both the Turkey Lake and Pompano TMC facilities. The Turnpike TMC and ITS Systems group is currently reviewing AVL software upgrades to provide AVL information integration into the SunNav[SM] System to make the system more efficient, and provide additional information fields to the TMC with minimal effort on the part of the service patrol.

Approx. Completion: On-going

Contact: Mike Washburn (407) 532-3999 ext. 3312

Turnpike Enterprise Road Ranger/State Farm Safety Patrol Dispatching (411451-1-78-02)

The Florida's Turnpike Enterprise's TMC dispatches Road Rangers on the Turnpike Mainline, HEFT, and Sawgrass and Veteran's Expressways. Road Rangers provide service between 6:00 AM to 10 PM., 7 days per week. Additional Road Ranger coverage is also scheduled during peak holiday or special event travel times. Road Rangers are dispatched by the TMC via 450 MHz radio (primary mode of communication) and Nextel Direct Connect (back-up communication) systems and are tracked via an AVL system. The TMC will continue expanding the Road Ranger dispatching service in conjunction with the Turnpike Enterprise's expansion towards 24/7 Road Ranger service.

Approx. Completion: Ongoing
Contact: Michael Washburn (407) 532-3999 ext. 3312

Future Turnpike ITS Projects

South Florida Part A ITS Improvements

This project will include fiber optic cable, DMS, CCTV, vehicle detection, and HAR deployment on the southern portion of the Homestead Extension of Florida's Turnpike from MP 0 to MP 7 and on the Golden Glades Spur of the Turnpike from MP 0X to MP 4X. The project will also deploy vehicle detection technologies in Miami-Dade, Broward, and Palm Beach Counties and will complete the CCTV installation in the Phase I project limits within Palm Beach and Miami-Dade Counties. The Turnpike has executed a contract with a design consultant and the plans are approaching the 100% level. Contractor procurement will take place in late 2006.

Approx. Completion: 2007
Contact: John Easterling (954) 975-4855 ext. 1292 or Paul Mannix (407) 264-3845

Dynamic Message Sign (DMS) Project

The objective of this project is to design and install additional DMSs in those areas along the Turnpike Mainline that do not already have DMS coverage. In addition, the project will include some arterial DMSs approaching the Turnpike Mainline. The concept report development was completed in November 2004. The Turnpike has executed a contract with a design consultant and the plans are at the 90% level. Contractor procurement will take place in early 2007.
Approx. Completion: 2007
Contact: John Easterling (954) 975-4855 ext. 1292 or Paul Mannix (407) 264-3845